

WHAT IS CLAIMED IS:

1. A heat sink comprising:

a first planar member having an upper face formed with  
a first groove portion;

5 a second planar member having a lower face formed with  
a second groove portion; and

a partition disposed between said upper face of said  
first planar member and said lower face of said second planar  
member;

10 said partition being formed with a hole for  
communicating a first space and a second space to each other,  
said first space being formed by said first groove portion  
and a lower face of said partition, said second space being  
formed by said second groove portion and an upper face of  
15 said partition;

said first space being provided with a first connecting  
member for connecting a bottom face of said first groove  
portion and said lower face of partition to each other;

20 said heat sink further comprising a supply port for  
supplying a fluid into said first space and a discharge port  
for discharging said fluid from said second space.

2. A heat sink according to claim 1, wherein a  
plurality of said first connecting members are provided.

3. A heat sink according to claim 1, wherein said  
25 first connecting member has a substantially circular cross  
section.

4. A heat sink according to claim 1, wherein said first connecting member has a cross section whose length in a first direction from said supply port to said hole is longer than the length in a second direction substantially perpendicular to said first direction, said cross section being shaped like a curve on said supply port side.

5 5. A heat sink according to claim 4, wherein said first connecting member has a substantially elliptical cross section.

10 6. A heat sink according to claim 1, wherein a second connecting member for connecting a bottom face of said second groove portion and said upper face of partition to each other is disposed in said second space.

15 7. A heat sink according to claim 6, wherein a plurality of said second connecting members are provided.

8. A heat sink according to claim 6, wherein said second connecting member has a substantially circular cross section.

20 9. A heat sink according to claim 6, wherein said second connecting member has a cross section whose length in a third direction from said hole to said discharge port is longer than the length in a fourth direction substantially perpendicular to said third direction, said cross section being shaped like a curve on said hole side.

25 10. A heat sink according to claim 9, wherein said second connecting member has a substantially elliptical cross

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section.

11. A heat sink according to claim 6, wherein said first and second connecting members disposed at a part where said first and second spaces overlap each other are located at respective positions overlapping each other.

12. A heat sink according to claim 1, wherein an upper face of said second planar member has a heating element mounting area for mounting a heating element to be cooled,

10 said hole being disposed at a position opposing said heating element mounting area.

13. A heat sink according to claim 1, wherein a plurality of said holes are provided.

14. A heat sink according to claim 1, wherein said hole has a sufficiently small cross section for injecting said fluid into said second space.

15. A semiconductor laser apparatus comprising:  
the heat sink according to claim 1; and  
a semiconductor laser mounted on an upper face of said second planar member of said heat sink.

20 A semiconductor laser apparatus according to claim 15, wherein said semiconductor laser has a plurality of laser emission points arranged in a predetermined direction,

25 said predetermined direction being oriented so as to become substantially parallel to said upper face of second planar member.

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17. A semiconductor laser stack apparatus comprising first and second heat sinks and first and second semiconductor lasers;

5 said first and second heat sinks being the heat sink according to claim 1;

said first semiconductor laser being held between an upper face of said second planar member of said first heat sink and a lower face of said first planar member of said second heat sink;

10 said second semiconductor laser being mounted on said upper face of second planar member of said second heat sink.

18. A semiconductor laser stack apparatus according to claim 17, wherein said first and second semiconductor lasers have a plurality of laser emission points arranged in a predetermined direction, said predetermined direction being oriented so as to become substantially parallel to said upper faces of first and second planar members.

19. A semiconductor laser stack apparatus according to claim 17, further comprising:

20 a supply tube connected to both of said supply port of said first heat sink and said supply port of said second heat sink; and

25 a discharge tube connected to both of said discharge port of said first heat sink and said discharge port of said second heat sink.